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REPORT

50X1-HUM

CD NO.

COUNTRY USSR

DATE OF  
INFORMATION 1950SUBJECT Scientific - Chemistry, higher oxides of  
nitrogen

DATE DIST. 20 Feb 1951

HOW  
PUBLISHED Monthly periodicalWHERE  
PUBLISHED Moscow

NO. OF PAGES 1

DATE  
PUBLISHED Jun 1950SUPPLEMENT TO  
REPORT NO.

LANGUAGE Russian

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Vestnik Akademii Nauk SSSR, Vol XX, No 6, 1950, p 108.

HIGHER OXIDES OF NITROGEN AND  
SYNTHESIS OF SALTS OF PERNITRIC ACID

[At the 28, 29 March 1950 meeting of the Department of Chem-  
 ical Sciences, Academy of Sciences USSR, Prof S. Z. Makarov pre-  
 sented a paper "Higher Oxides of Nitrogen and Synthesis of Salts of  
 Pernitric Acid" written by Prof V. I. Nikolayev and T. I. Arnol'd.  
 Representatives of the class of compounds described in this paper  
 are of interest from the standpoint of their potential use as in-  
 gredients of explosive mixtures and as components of rocket bipro-  
 pellants.]

The conditions of formation and the temperature limits of stability of nitro-  
 gen hexaoxide and nitrogen heptoxide were investigated. It was established that  
 the two higher oxides in question can be obtained by treating liquid nitrogen  
 dioxide or liquid nitrogen pentoxide at temperatures which are lower than minus  
 12.5° or minus 37.5°, respectively. An investigation of the curves of heating  
 and of the kinetics of decomposition of these two oxides showed that the hep-  
 toxide is stable up to minus 37.5° while the hexaoxide is stable up to minus 12.5°.

By neutralizing the higher oxides of nitrogen with carbonates or oxides of  
 silver and copper, salts of the corresponding peracids were prepared for the first  
 time. Silver pernitrate was found to be stable up to plus 68°.

Further investigations have been planned to characterize the new compounds  
 which have been prepared and to study their reactions.

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